

14.

Notes on Indian Birds. II.
The Species *Glaucidium cuculoides*.

S. DILLON RIPLEY.

Peabody Museum of Natural History.

The collection of a number of specimens of barred owlets in India recently and discussions with my friend H. G. Deignan, have prompted me to review this species and to attempt to clear up some of the anomalous specimens and the ranges of the races.

HISTORY OF THE SUPER-SPECIES.

1. *radiatum*.

Glaucidium cuculoides and *G. radiatum* apparently form a super-species, for such evidence as exists of their distribution indicates that they are allopatric. The species *radiatum* is found at low altitudes in the Himalayas, lower than *cuculoides*, and apparently replaces it. From the Himalayan foothills, *radiatum* spreads south throughout the Indian Peninsula as far as Khandesh, the eastern drier part of the Nilghiri plateau and south through Madras Presidency. In the wetter area of the west side of the lower peninsula, Coorg, Cochin and Travancore, *radiatum* is replaced by the darker subspecies, *r. malabaricum*.

In relatively recent times, *r. radiatum* has apparently invaded Ceylon, where it occurs in the drier zones of the Island, east, south and eastern part of the central "massif," only to be replaced in the wet zones of the central Hills, on their western side, and in the low country of the southwest by the strongly differentiated race, *castanonotum*. This race, characterized by having the feathers of the back, wing coverts, scapulars and rump suffused with light chestnut with greatly reduced barring, has been termed a race of *cuculoides* by Peters (Check List Birds World, 1940, IV, p. 133.), and so followed by me (*Spolia Zeylanica*, 1945, 24, pt. 3, p. 209.). In fact *castanonotum* is a small bird (wing 126-138.5 mm.), with fine close barring and obviously belongs with *radiatum*. However, in its high degree of differentiation as compared to the Peninsula race, *malabaricum*, I believe it represents an early wave of invasion which has become localized in the heavy rainfall area in the face of the advance of the later typical *radiatum* stock. The occurrence of typical *radiatum* in Ceylon and in southern India where it impinges closely on the present ranges of its two related races implies a secondary degree of adaptation by the typical race which has allowed it to spread south through drier, more lightly wooded

areas, from its potential land of origin along the base of the Himalayas. Presumably this spread is correlated with geologically recent postpluvial conditions.

2. *cuculoides*.

This species is found along the Himalayan chain from Murree in the west to Assam, the Indo-chinese, Malayan and Chinese subregions. It occurs at higher altitudes in the Himalayas than *radiatum* until the range of that species ceases in Bengal and Arakan. In Bengal *cuculoides* is found at lower altitudes and becomes a lowland and submontane as well as montane bird throughout the rest of its range. Thus it replaces *radiatum* ecologically east of the latter's range. An interesting correlation with the range of *cuculoides* is that it seems to be confined to areas with an annual rainfall of more than 60 inches. In addition the darkest race of the species, most saturated in tone of plumage, occurs in the area where the annual rainfall is more than 120 inches.

One anomaly in the range of *cuculoides* is that there is a discontinuous distribution of the species in the Malayan subregion. A race of *cuculoides* occurs in Tenasserim and Peninsular Siam, and then the species is absent from Malaya, Sumatra and Borneo, but occurs as a very well-marked race, *castanonotum*, in Java and Bali. Like *G. r. castanonotum* of Ceylon, this subspecies is marked by a rufous suffusion on the back, wing coverts, scapulars and rump, but in this case the larger size (wing 142-148.5 mm.) and the wider, coarser barring identify it closely with *cuculoides*. The similar plumage pattern in Ceylon and Java, however, is an interesting case of parallelism in response by the two species.

No valid explanation for this case of discontinuous distribution seems to exist. The original invasion of the Greater Sunda Islands by *cuculoides* stock was presumably pre-pluvial, but no outstanding environmental conditions occur to explain the absence of the species from Malaya or the other Greater Sundas. The only potential competitor would appear to be the smaller species, *Glaucidium brodei*, which, however, occurs not only in the gap area, but throughout a large part of the range of *cuculoides* from the western Himalayas to the Indo-chinese subregion.

SPECIATION TRENDS.

There are two main trends of differentiation in *Glaucidium cuculoides* which act independently. One is size, which follows the degrees of latitude or montane altitude in the traditional way expressed by Bergmann's hypothesis. The second is color which varies from brown to rufous in a random way without obvious correlation except in one case. There is apparently no selective advantage in shades of dark color in these semi-diurnal owls. Dimorphism is not marked as it is in *G. brodei*. In the case of *Glaucidium radiatum* there is some dimorphism, i.e., a more gray plumage, vide Whistler and Kinnear (*Journ. Bomb. Nat. Hist. Soc.*, 1935, 38, p. 238). In *cuculoides* some specimens seem more brownish or more rufescent than others, but I have not seen any specimens in which this is so marked as to prevent their identification.

RACES.

Peters (tom. cit., p. 133.), lists seven races of the species, but as Mayr notes (*Ibis*, 1938, p. 314.), there are several populations of varying color included in one or more of the existing forms, particularly *rufescens*. I would list, therefore, the following:

1. *Glaucidium cuculoides cuculoides* (Vigors).

This is a race lacking in rufescence; blackish-brown above and closely barred with fulvous, the bars on the upper back and nape rather broad and whitish. The wings are rufous-brown with rufous-fulvous bars, the scapulars and outer median wing coverts with white outer edges to the feathers, giving the appearance of spots (not shown in Gould's Plate 4, Century Birds, 1832.). The lower parts are whitish with dark brown and fulvous bars on the breast. The abdomen and vent areas tend to be streaked, more than barred, with light rufous brown.

Measurements:

N. Punjab and Nepal 11 ♂♂ and ♀♀

Wing	Tail	Culmen (from cere)
141-157 (149.5)	75-90 (83.5)	14-16 (15.4)

Range: western Himalayas from Murree and Musoorie through Nepal. Foothills to 6,000 ft.

2. *Glaucidium cuculoides austerum* subsp. nov.

Type: ♂ ad. (U.S.N.M. No. 390166.), collected Jan. 11, 1947, at Tezu, Mishmi Hills, N.E. Assam, by S. Dillon Ripley.

Description: above this race is dark rufous brown with rufous-buff bars. The tone of the wings is darker, richer rufous than in the other races of the species. The tail is blackish, the barring fulvous. Below the amount of basal white on the underparts is much reduced as the barring is heavy and complete on the breast and the bars are rufous buff rather than whitish or fulvous. The abdomen and vent areas are heavily streaked or barred or streaky-barred with dark rufous brown, darker than in any other race of the species.

There is an average size increase over *cuculoides*.

Measurements:

Sikkim to N. Assam, 16 ♂♂ and ♀♀

Wing	Tail	Culmen
148-156.5 (153.1)	81-94 (87.6)	15-16.5 (15.7)

Range: Sikkim, Bengal Duars, Bhutan, Assam north of the Brahmaputra, Mishmi Hills, and south in north Lakhimpur Division, Dibrugarh to Margherita, and into the upper Hukawng Valley of northwest Burma.

Remarks: birds from the Mishmi Hills are the most blackish in tone, but not sufficiently so as to distinguish them from the population of the rest of the range outlined above.

3. *Glaucidium cuculoides rufescens*

Stuart Baker.

This race is more pure brown, far less rufous than *austerum*, and with pure fulvous, less rufous fulvous, bars on the upper and lower parts. The population is, however, distinctly more rufous in tone than typical *cuculoides*. Below *rufescens* is barred and streaked with cinnamon brown, paler than *austerum*, but darker and with far less white showing than *cuculoides*.

Measurements:

Cachar, Burma, 8 ♂♂ and ♀♀

Wing	Tail	Culmen
148-156.5 (153)	85-91 (87.6)	15-16 (15.6)

Range: southeast Bengal, Assam in Cachar, Manipur north to the Patkoi, Burma in the Hukawng Valley (where it may intergrade with *austerum*, the Chin Hills, Myitkina, and south to Pegu and the Shan States.

4. *Glaucidium cuculoides brügeli* (Parrot).

In color there is no real character to separate this race from the preceding one. It is supposed to be less dark above and less rufous below, but I can find no real consistency in this claim. In series it might be asserted that *brügeli* is a trace more rufous on the under parts. There is however, a distinction in size. This race is smaller than *rufescens*.

Measurements:

Siam, 10 ♂♂ and ♀♀

Wing	Tail	Culmen
138-148.5 (144)	76.5-81 (78.7)	14.5-16.5 (15.6)

Range: Burma in Tenasserim; Siam except the southeast; and possibly (?) northern Cambodia, Indo-china.

Remarks: the type of *brügeli* is in Munich. Apparently it came from near Bangkok. However, the type locality has been fixed by Deignan (*Bull. 186 U. S. Nat. Mus.*, 1945, p. 179.), at the Sam Khok district, half-way between Bangkok and Ayutthaya. In this area birds represent the type described above.

5. *Glaucidium cuculoides deignani* subsp. nov.

Type: ♀ ad. (U.S.N.M. No. 308542.), col-

lected Feb. 12, 1927, at Nongkhor, Southeast Siam, by Hugh M. Smith.

Description: This race is more rufescent on the upper parts than *brügeli* or *rufescens*, but it is a paler type of rufescence. The wing feathers and wing coverts are ferruginous-cinnamon. On the under parts the barring and streaking tends to be more extensive than in *brügeli* and *rufescens* and much more rufescent, but of a ferruginous-cinnamon type, less saturated with fulvous. There is no difference in size between this race and *brügeli*.

In color and in smaller size this race differs greatly from *cuculoides*, being ferruginous-cinnamon in tone and more barred and streaked below. From *austerum* it differs in size and in the cinnamon rather than dark fulvous-rufous coloration of the plumage.

Measurements:

S.E. Siam, S.W. Indo-china 8 ♂♂ and ♀♀

Wing	Tail	Culmen
145-151 (148.1)	74-80.5 (78.3)	14-16 (14.7)

Range: southeast Siam, Nongkhor, Hoopon, Ban Sadet, Sriracha; southwest Indo-china, Da Ban, Dalat, Trang Bom, south Annam, and Bienhoa in Cochin China.

Remarks: a single bird from the forests of Banteai Srei in northern Cambodia, taken in January, belongs to *brügeli*, although it is rather dark in tone. It may well be a winter wanderer from east Siam.

This race is named for my friend, Herbert G. Deignan.

6. *Glaucidium cuculoides delacouri* subsp. nov.

Type: ♀ ad. (U.S.N.M. No. 304182.), collected May 5, 1924, at Baetan Tray, 36 km. N.N.E. of Lai Chau, Tonkin, Indo-china, by F. R. Wulsin.

Description: this race is the most pure rufescent of all races of the species, darker and more rufous on the upper parts than any other except *austerum*, which is more saturated with dark fulvous, more blackish in tone. Below this race is heavily barred and streaked, more so than any race except *austerum*, in which the barring descends farther onto the abdomen. The general effect is of a suffusion of dark rufescence, richer rufous than in any other race. The rufous tone appears richer than in *austerum* because it is less infused with melanin, more truly "reddish." The bill is longer in *delacouri* than in the preceding races.

Measurements:

N. Indo-china 4 ♂♂ and ♀♀

Wing	Tail	Culmen
150-157.5 (154)	86.5-92.5 (89.4)	16-16 (16.4)

Range: Indo-china in Tonkin, except the northern valley of the Red River (Chapa area), and the extreme east (Tunghing); northern Laos at Xiengkhouang; north Annam at Hoi-Xuan.

This race is named for my friend, Jean Delacour.

7. *Glaucidium cuculoides whitelyi* (Blyth).

This is the largest race of the species and lives in the northernmost part of the range. It is composed of more than one phenotypic population, but I have been unable to separate them on any satisfactory basis. Birds from the western and southern part of the range are darker, more rufous fulvous than birds from the northern and eastern segments of the range. In these latter the barring on the plumage seems paler fulvous in tone. However, lighter birds appear in the west in a declining ratio moving from east to west, just as dark individuals appear in the east.

Beneath, the underparts of this race show more white basally with less of an overlay of brown than any other race except typical *cuculoides*. The general tone of the barring and streaking on the underparts is dark brown.

Measurements:

China, N. Burma, N. Tonkin, 9 ♂♂ and ♀♀

Wing	Tail	Culmen
155-170 (162.1)	87-107 (96.3)	15-17.2 (15.9)

Range: extreme northeast Burma on the Yunnan border (Nan Ling R.); China in Yunnan, southern Szechuan and east, south of the Yangtse River, to Kiangsu; Indo-China in northern Tonkin (upper Red River Valley), and the extreme east, Tunghing.

Remarks: the difference in color between individuals of *whitelyi* had been noted by Sharpe in 1875 (Cat. Birds, II, p. 222), who wrote that Fukien birds in the British Museum collection were more rufous than typical *whitelyi*. As the other specimens listed are from Ningpo, I think it advisable to restrict the type locality of *whitelyi* to Chekiang Prov., eastern China. There is, of course, a possibility that dimorphism in color is developing in this subspecies as it has not apparently developed in other members of the species. However, the general appearance of the series from any one locality, their basic uniformity, tends to discount this possibility.

Many of the previous authors have relied on the number of tail bars in this species as a racial character. There does seem to be a tendency for birds from China to have one less bar on the tail than birds from India (6-7 versus 7-8). This is an uncertain character, however, for birds from intermediate areas like Burma and Assam vary from 6 to 9!

8. *Glaucidium cuculoides persimile* Hartert.

In color this race is more brownish, less rufous above and below than *delacouri*, and smaller and more rufous than *whitelyi*. In general appearance it is very similar but very slightly more rufous than *rufescens*. The culmen, however, is somewhat longer.

Measurements:

Hainan 9 ♂♂ and ♀♀

Wing	Tail	Culmen
148-156 (153.3)	85-90 (88.1)	16.5-18

Range: Hainan Island.

9. *Glaucidium cuculoides castanopterum*
(Horsfield).

A dark brownish-rufous form with a strong rich rufous suffusion on the back, upper wing coverts, scapulars and rump. In these areas the barring has become obsolete. A distinctive isolated race.

Measurements:

Bali, 2 ♂♂

Wing	Tail	Culmen
142,148.5	70,77	14.5

Range: Islands of Java and Bali.